

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference MMI1100WO	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US03/41766	International filing date ( <i>day/month/year</i> ) 31 December 2003 (31.12.2003)	(Earliest) Priority Date ( <i>day/month/year</i> ) 31 December 2002 (31.12.2002)
Applicant MMI GENOMICS, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

#### 1. Basis of the Report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☒ **Unity of invention is lacking** (See Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. \_\_\_\_\_



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures

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## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.: 1-22
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☒  
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/41766

## A. CLASSIFICATION OF SUBJECT MATTER

IPC( ) : C12Q 1/68; C12P 19/34

US CL : 435/6, 91.1

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/6, 91.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
✓ X	US 5,374,523 (Collier et al.) 20 December 1994 (20.12.1994), see abstract, col. 4 lines 48-67, col. 5 lines 1-39	1-22
✓ X	Heaton et al. Selection and use of SNP markers for animal identification and paternity analysis in U.S. beef cattle. May 2002, vol. 13, pages 272-281., see entire document	1-22
✓ A	Lin et al. Bovine BAC end sequences from library TAMB1. Genbank Accession CC914719. 8. August. 2003.	1-22
✓ A	Antonellis et al. NISC comparative sequencing initiative. Genebank Accession AC147495. 3. December. 2003.	1-22
✓ A	Green, E.D. NISC comparative sequencing initiative. Genebank Accession GI21724096. 27. September. 2002.	1-22

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

04 February 2005 (04.02.2005)

Date of mailing of the international search report

16 MAR 2005

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. 571.273.8300

Authorized officer

Heather G. Calamita

Telephone No. 571.272.1600

## INTERNATIONAL SEARCH REPORT

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### BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-22, drawn to a method for inferring a trait of a bovine subject.

Group II, claim(s) 23-28, drawn to a method for determining a polymorphism.

Group III, claim(s) 29-49, drawn to a method for determining a SNP.

Group IV, claim(s) 50-58, drawn to a method for cloning a bovine subject.

Group V, claim(s) 59-67, drawn to a method for tracking meat of a bovine subject.

Group VI, claim(s) 68-69, drawn to a method for establishing the economic value of a bovine subject.

Group VII, claim(s) 70-74, drawn to a method for improving profits related to selling beer.

Group VIII, claim(s) 75-86, drawn to a computer system.

Group IX, claim(s) 87, drawn to a method for maximizing a physical characteristic of a bovine subject.

Group X, claim(s) 88-91 and 100-126, drawn to an isolated oligonucleotide.

Group XI, claim(s) 92-99, drawn to a method for creating a progeny bovine subject.

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In order for more than one species to be examined, the appropriate additional examination fees must be paid. The species are as follows: Sequence numbers 19473-21982, 21983-24492 and 24493-64886.

The inventions listed as Groups I-XI do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The methods of at least claims 1, 23, 29, 50, 59, 68, 70, 87 and 92 are not joined to the isolated sequences of at least claims 88 and 100. The methods of at least claims 1, 23, 29, 50, 59, 68, 70, 87 and 92 are drawn to inferring traits, identifying polymorphisms and genes found in a variety of cows. This is not a special technical feature which joins the claimed inventions because Collier et al. (USPN 5,374,523, 20 December 1994) teach determining the presence in bovine genetic material of a genetic marker which is indicative of an inheritable trait of increased milk production, further Heaton et al (Mammalian Genome, 2002) teach the use of SNP markers for genotyping 17 breeds of cattle based on panels of SNP markers. The sequences of at least claims 88 and 100 are not limited in scope so as to require the methods of at least claims 1, 23, 29, 50, 59, 68, 70, 87 and 92 and therefore are not joined to claims 1, 23, 29, 50, 59, 68, 70, 87 and 92 by a special technical feature. Further the nucleic acid sequences claimed in the instant application are distinct and contain no common core structure. These sequences do not code for a single gene or even an operon of genes. Applicant is therefore required to choose one SEQ ID NO for examination.

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## Continuation of B. FIELDS SEARCHED Item 3:

Medline, science direct, biosis, embase and SEQ ID NOs 21683, 20786, 20520, 20793, 21205, 20258, 19517, 21979, 21573 and 21278